



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants : T. Bretschneider, et al.
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For : SYNERGISTIC INSECTICIDAL MIXTURES
Group Art Unit : 1616
Examiner : Robinson

DECLARATION

Dr. Joerg Konze hereby declares:

- that he is a biologist having studied at the University of Bochum, Germany;
- that he received his doctor's degree in biology at the University of Bochum in 1977;
- that he entered the employ of Bayer in 1980;
- that he has specialized in plant protection (entomology);
- that the following tests have been carried out under his supervision and direction.

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Formula for the efficacy of the combination of two compounds

The expected efficacy of a given combination of two compounds is calculated as follows (see Colby, S.R., „Calculating Synergistic and antagonistic Responses of Herbicide Combinations“, Weeds 15, pp. 20-22, 1967):

If

X is the efficacy expressed in % mortality of the untreated control for test compound A at a concentration of m ppm,

Y is the efficacy expressed in % mortality of the untreated control for test compound B at a concentration of n ppm,

E is the efficacy expressed in % mortality of the untreated control using the mixture of A and B at m and n ppm,

$$\text{then is } E = X + Y - \frac{X \times Y}{100}$$

If the observed insecticidal efficacy of the combination is higher than the one calculated as „E“, then the combination of the two compounds is more than additive, i.e., there is a synergistic effect.

Example A

Aphis gossypii test

Solvent: 7 parts by weight of dimethylformamide

Emulsifier: 2 parts by weight of alkylaryl polyglycoether

To produce a suitable preparation of active compound, 1 part by weight of active compound is mixed with the stated amount of solvent and emulsifier, and the concentrate is diluted with emulsifier-containing water to the desired concentration.

Cotton leaves (*Gossypium hirsutum*) which are heavily infested by aphids (*Aphis gossypii*) are treated by being dipped into the preparation of the active compound of the desired concentration.

After the specified period of time, the mortality in % is determined. 100 % means that all the aphids have been killed; 0 % means that none of the aphids have been killed.

According to the present application in this test e.g. the following combination shows a synergistic effect in comparison to the single compounds:

Table A, Page 1

plant damaging insects
Aphis gossypii-test

active compound	active compound concentration in ppm	mortality in % after 1 ^d
Spiromesifen (I_a)		
known	200	0
Thiamethoxam (I_g)		
known	5	70
Spiromesifen + Thiamethoxam (40:1)		
according to the invention	200 + 5	<u>obs.*</u> 98 <u>cal.**</u> 70

* obs. = observed insecticidal efficacy

** cal. = efficacy calculated with Colby-formula

Table A, Page 2

plant damaging insects
Aphis gossypii-test

active compound	active compound concentration in ppm	mortality in % after 1 ^d
<hr/>		
Spiromesifen (Ia)		
known	40	0
<hr/>		
Dinotefuran (II 2)		
known	5	45
<hr/>		
Spiromesifen + Dinotefuran (8:1)		
according to the invention		
	40 + 5	$\frac{\text{obs.}^*}{75}$ $\frac{\text{cal.}^{**}}{45}$

* obs. = observed insecticidal efficacy

** cal. = efficacy calculated with Colby-formula

Example B

Bemisia test

Solvent: 7 parts by weight of dimethylformamide

Emulsifier: 2 parts by weight of alkylaryl polyglycolether

To produce a suitable preparation of active compound, 1 part by weight of active compound is mixed with the stated amount of solvent and emulsifier, and the concentrate is diluted with emulsifier-containing water to the desired concentration.

Cotton plants (*Gossypium hirsutum*) infested with eggs, larvae and pupae of the white fly *Bemisia tabaci* were dipped in a test solution containing the desired concentration of the active ingredient.

After the specified period of time, mortality in % is determined. 100 % means that all the animals have been killed; 0 % means that none of the animals have been killed.

According to the present application in this test e.g. the following combination shows a synergistic effect in comparison to the single compounds:

Table B, Page 1

plant damaging insects
Bemisia-test

active compound	active compound concentration in ppm	mortality in % after 10 ^d
<hr/>		
Spiromesifen (Ia)		
known	5	50
<hr/>		
Thiamethoxam (IIg)		
known	5	0
<hr/>		
Spiromesifen + Thiamethoxam (1:1)		
according to the invention		
	5 + 5	<div><div><u>obs.*</u> 95</div><div><u>cal.**</u> 50</div></div>

* obs. = observed insecticidal efficacy

** cal. = efficacy calculated with Colby-formula

Table B, Page 2

plant damaging insects
Bemisia-test

active compound	active compound concentration in ppm	mortality in % after 10 ^d
<hr/>		
Spiromesifen (I_a)		
known		
	5	50
<hr/>		
Clothianidin (I_m)		
known		
	5	0
<hr/>		
Spiromesifen + Clothianidin (1:1)		
according to the invention		
	5 + 5	<u>obs.*</u> 95 <u>cal.**</u> 50
<hr/>		

* obs. = observed insecticidal efficacy

** cal. = efficacy calculated with Colby-formula

Table B, Page 3

plant damaging insects
Bemisia-test

active compound	active compound concentration in ppm	mortality in % after 10 ^d
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Spiromesifen (Ia)

known

5

50

Acetamiprid (II e)

known

1

0

Spiromesifen + Acetamiprid (5:1)

according to the invention

5 + 1

obs.*	cal.**
80	50

* obs. = observed insecticidal efficacy

** cal. = efficacy calculated with Colby-formula

Table B, Page 4

plant damaging insects

Bemisia-test

active compound

active compound

concentration in ppm

mortality

in % after 10^d**Spiromesifen (Ia)**

known

5

50

Dinotefuran (II 2)

known

5

0

Spiromesifen + Dinotefuran (1:1)

according to the invention

5 + 5

obs.*
95cal.**
50

* obs. = observed insecticidal efficacy

** cal. = efficacy calculated with Colby-formula

Example C

Myzus test

Solvent: 7 parts by weight of dimethylformamide

Emulsifier: 2 parts by weight of alkylaryl polyglycoether

To produce a suitable preparation of active compound, 1 part by weight of active compound is mixed with the stated amount of solvent and emulsifier, and the concentrate is diluted with emulsifier-containing water to the desired concentration.

Cabbage leaves (*Brassica oleracea*) which are heavily infested by aphids (*Myzus persicae*) are treated by being dipped into the preparation of the active compound of the desired concentration.

After the specified period of time, the mortality in % is determined. 100 % means that all the aphids have been killed; 0 % means that none of the aphids have been killed.

According to the present application in this test e.g. the following combination shows a synergistic effect in comparison to the single compounds:

Table C, Page 1

plant damaging insects
Myzus-test

active compound	active compound concentration in ppm	mortality in % after 6 ^d
<hr/>		
Spiromesifen (I_a)		
known		
	40	5
<hr/>		
Thiamethoxam (II_g)		
known		
	1	85
<hr/>		
Spiromesifen + Thiamethoxam (40:1)		
according to the invention		
	40 + 1	<div>obs.*</div> <div>98</div> <div>cal.**</div> <div>85,75</div>
<hr/>		

* obs. = observed insecticidal efficacy

** cal. = efficacy calculated with Colby-formula

Tabelle C, Blatt 2

pflanzenschädigende Insekten Myzus-Test

Wirkstoffe	Wirkstoffkonzentration in ppm	Abtötungsgrad in % nach 1 ^d	
<hr/>			
Spiromesifen (I_a)			
bekannt	200	0	
<hr/>			
Clothianidin (I_m)			
bekannt	1	55	
<hr/>			
Spiromesifen + Clothianidin (200:1)			
erfindungsgemäß	200 + 1	<u>gef.*</u> 80	<u>ber.**</u> 55

* gef. = gefundene Wirkung

** ber. = nach der Colby-Formel berechnete Wirkung

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07
2002-~~07~~-05
Date

J. Konze
Dr. Joerg Konze

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